

A POPULAR TREATISE ON THE COMMON INDIAN SNAKES.

ILLUSTRATED BY COLOURED PLATE AND DIAGRAMS

BY

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Part XXVII (with Plate XXVII and Diagram.)

(Continued from page 97 of Volume XXVI.)

HYDROPHIS SPIRALIS (SHAW).

THE NARROW-RINGED SEA-SNAKE.

History.—The type is the young example collected by Russell, now in the British Museum, labelled from the "Indian Ocean". It was described by Shaw in 1802. In my monograph of the sea-snakes published by the Asiatic Society of Bengal in 1909 I expressed the opinion that *spiralis* (Shaw) and *brugmansii* (Boie) were identical species; and subsequently in this Journal (Vol. XX, p. 558) in 1911 substantiated this opinion by remarks upon the variations in the lepidosis, and colouration of a brood of 14 young. The snake described by Gray under the name *subcincta*, and that by Gunther as *longiceps*, both known from single specimens in the British Museum, I cannot dissociate from this species. Again the snake described by me and christened *alcocki* in 1906 (memoirs of the Asiatic Society of Bengal) I now think cannot be regarded as a species distinct from *spiralis*.

Nomenclature. (a) *Scientific.*—The generic name is from the Greek "hudor" "water", and "ophis" "snake," and the specific title from Latin refers to the decoration of the body. This, however, is in the form of rings rather than spirals.

(b) *English.*—The narrow-ringed sea-snake fits this subject, in which the rings so commonly seen in sea-snakes are narrower than in the other species, at any rate those within Indian seas.

(c) *Vernacular.*—Tamil fishermen do not discriminate between the various kinds, and call most sea-snakes "kadel nagam" or "sea-snake."

Identification.—The most reliable and at the same time simple way that I can suggest to identify this species is by counting the costal rows two heads-lengths behind the head, and the same distance before the anus. In no other sea-snake (excepting the species of *Platurus* and *H. jerdoni*) are the rows posteriorly so few in excess of those anteriorly. In the latter spot they range between 25 and 31, and posteriorly only number 2 to 6 more, whereas in other species the posterior count is from 10 to 20 in excess of the



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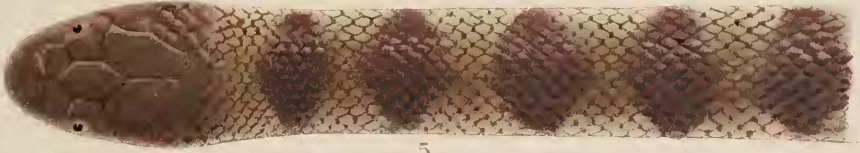
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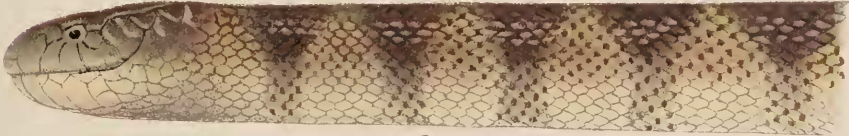
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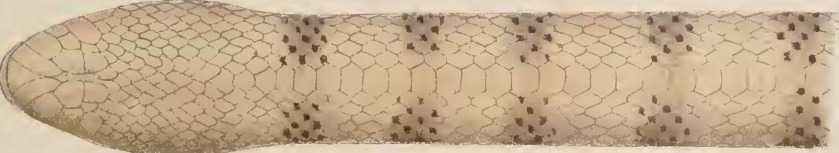
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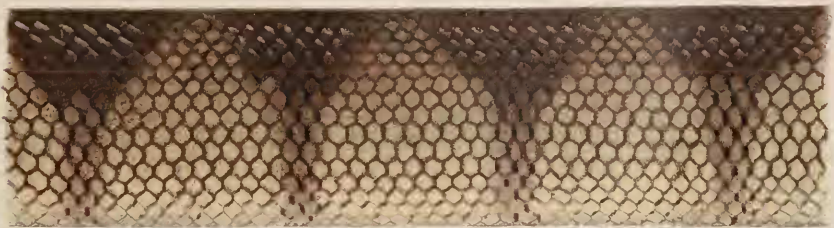
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THE COMMON INDIAN SNAKES (Wall)

1-4. *Distira spiralis*, var. *brugmansii*, poisonous. 5-8. *Distira cyanocincta*, poisonous. all nat. size.

anterior. A common though not invariable shield character is the large temporal which usually descends to the border of the lip (see figure A. in diagram).

General characters.—For a sea-snake, it is of conspicuously robust habit and unusually elongate. The calibre of the body anteriorly is but little less than that posteriorly. Anteriorly it is cylindrical, posteriorly but little compressed. The head is large with strong jaws, and the tail as in other hydrophids is a strongly compressed fin.

Colour and markings.—The back is usually a dull greenish or bluish hue fading about midcosta, where the lower half of the snake becomes uniform yellow or buff. The body is usually encircled, with from 34 to 59 black or blackish bands, often expanded vertebrally and ventrally, but these may be replaced by dorsal bars, the arrangement being very variable. The specimens may be grouped as follows:—

(A) Body banded.

- (a) Variety *brugmansii* (Boie). With bands much narrower at midcosta than the intervals. No vertebral nor ventral spots. With this I place *robusta* (Gunther), *bishopi* (Murray), and *melanocephalus* (Gray). The commonest variety, from the Persian Coast (Gangestun and Muscat) to the Malay Archipelago (Penang).
- (b) Variety *typica*, vel *spiralis* (Shaw). Differs from the last only in exhibiting vertebral spots in one, many, or in all the interspaces. When few, these are usually seen in the foremost, and posterior spaces. Common from the coast of Sind to Madras.
- (c) As the last with a similar series of ventral as well as vertebral intermediate spots. I know only one specimen which is in the Colombo Museum, presumably from the Ceylon Coast.
- (d) Variety *melanosoma* (Gunther). Bands at midcosta as broad or broader than the spaces, dilated both vertebrally and ventrally so as to be more or less confluent in these regions. I place also *floweri* (Boulenger), and *alcocki* (Wall) with this which is an unusual form.

(B) Body barred.

- (e) Variety *subcincta* (Gray). The dorsum is barred and these bars are interrupted near midcosta so as to leave a series of spots on the side of the body. An unusual form, the type of which comes from the Indian Ocean.

(f) Variety *longiceps* (Gunther). With dorsal bars, broader than the interspaces, and no costal spots. *Temporalis* (Blanford) I also place with this. It is uncommon. I have seen specimens from Bombay and Karachi.

(C) Body banded anteriorly, barred posteriorly.

This form is intermediate between A and B. Such a specimen was sent by Dr. Henderson to the British Museum from Madras.

Habits.—As one would expect from its conformation, it is strong and active. It swims with vigour, and from its large size might prove a very disagreeable foe to encounter in the water. An amusing account of the capture of a giant specimen appeared in this Journal in 1913 (Vol. XXII, p. 403) over the signature of Mr. Stone, the Chief Officer of the P. and O. Steamer Arcadia.

Food.—I have lately had several specimens and submitted the curious elongate fish which they had fed upon to Dr. Henderson for identification. These fish were eel-like in conformation, and were pronounced the young of a murænid, either *Ophichthys boro* (Han.: buch:) or *O. orientalis* (McClelland).

Breeding.—For the only domestic occurrence known to me I am indebted to Dr. Henderson. On the 1st June 1910 a large gravid ♀ was caught in Madras, and submitted to me with its unborn brood of 14 for my examination. The brood in an advanced stage of development included 10 males and 4 females. The males (with genitals extruded) measured $10\frac{1}{2}$ to $11\frac{1}{2}$ inches, and the females $10\frac{3}{4}$ to $11\frac{1}{4}$ inches.

Length.—The young are probably about 15 inches long at birth, judging from specimens of this length in which the umbilicus is open. Adults usually range between $4\frac{1}{2}$ and $5\frac{1}{2}$ feet, and specimens over 6 feet occur, but are unusual. Dr. Henderson's gravid ♀ alluded to above measured 8 feet 3 inches. Mr. Stone's specimen from Penang to which a reference has been made, was 9 feet in life and the skin when I measured it had shrunk to 8 feet 9 inches. This is much the largest sea-snake I have ever heard of, and such a monster might very easily have been the foundation for the story of "the sea-snake," now I suppose universally discredited. A snake always appears to be a great deal longer than actual measurement reveals. Only lately Dr. Henderson showed me a python's skin in the Madras Museum. A friend knowledgeable in snake matters was asked to compute its length as the snake lay alive in the vivarium, and estimated it at about 26 feet. When dead it proved to be 16 feet.

Poison.—Nothing is known of the toxicity of this venom. No casualties in the human subject have been reported, and the poison has not been experimented with in the laboratory.

Distribution.—From the Persian Gulf to the Malayan Archipelago.

Lepidosis.—*Rostral*—Broader than high. *Nasals.*—In contact behind the rostral; the suture from the nostril, when present passes to the 2nd labial. *Prefrontals.*—With rare exceptions touch the 2nd labial. *Preocular.*—One. *Postoculars.*—One (rarely two). *Temporals.*—One large anterior, succeeded by a posterior of equal size; the anterior frequently descending to the margin of the lip. Rarely there are two superposed anterior temporals, and the posterior shield is not infrequently replaced by small scales. *Supralabials.*—6 to 8: the anterior 4, 5 or 6 usually large and undivided, the rest divided. The 3rd and 4th usually (rarely the 5th also) touch the eye. *Infralabials.*—4; the last in contact with 3 or 4 scales behind. *Marginals.*—Usually one wedged between the 3rd and 4th infralabials (rarely two after the 3rd). *Sublinguals.*—Two well developed pairs, the fellows of each in contact (or the posterior separated.) *Costals.*—Two headlengths behind the head, usually 25 to 29 (rarely 23 to 31); in midbody usually 31 to 35 (rarely 29 to 36); two headlengths before the anus 28 to 36: more or less imbricate, smooth or nearly smooth in the young, feebly or strongly tuberculate in adults. *Ventrals.*—282 to 373. Entire throughout except for a few posteriorly; less than twice or hardly twice the breadth of the last costal row.

Dentition.—I have examined the *maxillary* teeth of well over a dozen examples, and find there are usually 7 (rarely 6) behind the paired fangs. *Palatine.*—7. *Pterygoid.*—12 to 13. *Mandibular*—13 to 15.

Plate.—Our figures are excellent, and show the commonest form, (Variety *brugmansii*) to be met with around our coasts. The ventrals are shown too broad relatively.

HYDROPHIS CYANOCINCTUS* (DAUDIN).

THE CHITTUL.

History.—The type of this species I take to be the specimen in the British Museum from the Sunderbunds, which was one of the

* I have no hesitation in declaring the *tuberculata* and *crassicollis* of Anderson, the *dayanus* of Stoliczka, and the *trachyceps* of Theobalds (all of which are known from single specimens in the Indian Museum which I have examined) identical with *cyanocinctus*. Further I think the *sublevis* and *lapemidoides* of Gray, all of which I have examined in the British Museum, will prove to belong to this species. It is more than likely too that the *melanocephalus* of Gray, and the *melanosoma* of Gunther may have to be referred to this species. I have seen the types of each in the British Museum. The *vituberculata* of Peters I have not examined, but I see no reason from the description and figure given to dissociate it from *cyanocinctus*.

collection originally presented by Russell to the Royal College of Surgeons. This specimen is probably the subject from which figure IX Russell's second volume published in 1801 is taken. The name *cyanocinctus* was conferred by Daudin in 1803.

Nomenclature. (a) *Scientific.*—The generic name is from the Greek signifying "water snake," and the specific is a hybrid word of Greek and Latin origin meaning "blue banded."

(b) *English.*—One cannot do better than appropriate the vernacular name for English use.

(c) *Vernacular.*—According to Russell "chittul" is the name by which the snake is known to the natives about the Sunderbunds, but I very much doubt if they can really discriminate between this and many other sea-snakes. The word is probably a derivative of "chitti" implying spotted or mottled.

General Characters.—The adult is a strongly built and heavy snake. The forebody is cylindrical, and varies from about two-fifths to two-thirds the depth of the body at its greatest girth, except in heavily gravid females where it may be only one-third. Posteriorly the body is compressed, and the tail is flatly compressed as in other sea-snakes. The head, of the same calibre as the forebody, is relatively large and the jaws strong.

Colouration.—The many varieties have been summed up by Mr. Boulenger, and I have little to add to his arrangement.

Variety (A).—*typica* (Daudin). With well-defined black bands, more or less connected ventrally.

(a) All the bands complete. A common form ranging from the Persian Gulf to Tenasserim.

(b) With some of the posterior bands interrupted costally or subcostally. Not uncommon. From the Persian Gulf to Tenasserim.

(c) With some of the posterior bands deficient ventrally, and thus converted into bars. Not uncommon. From the Persian Gulf to Tenasserim.

Variety (B).—With well-defined black bands not united ventrally. A common form occurring between the Persian Gulf and Tenasserim.

Variety (C).—With obscure bands or bars. A common form usually met with in adult specimens, and occurring between the Persian Gulf and Tenasserim.

Variety (D).—With well-defined dorsal bars. A common form seen in examples from the Persian Gulf to Tenasserim.

Variety (E).—The *phipsoni* of Murray. With a continuous, black dorsal band. A rare form known from a single specimen from Bombay, in the Bombay Natural History Society collection.

Identification.—Given a normal specimen identification is easy. A large majority of specimens will be found to have the 3rd, 4th and 5th labials entire, and all touching the eye. In addition there is nearly always a complete row of marginals after the 2nd infralabial, which cuts off the subsequent infralabials from the margin of the lip. Unfortunately in many specimens certain of the head shields are subject to great variation. Thus only two labials may touch the eye, and either the 3rd, 4th, or 5th or all, may be divided. Rarely specimens have a single cuneate marginal between the 3rd and 4th infralabials, or a complete row after the 3rd infralabial. The ranges of costal rows and ventrals are considerable. These facts make identification in some cases difficult, in fact many new species have been created by various authors, on individuals that present a number of costals or ventrals in excess of the previously recorded ranges or that present unusual characters in their head shields. Where only two labials touch the eye, the costals and ventrals must be counted, and these may come within the ranges of the following species, *nigrocinctus*, *diadema*, *mamillaris*, and *cærulescens*. An examination of the maxillary teeth is then called for, and this is best left to an expert. In *nigrocinctus* there are 2 teeth behind the fangs, in *cyanocinctus* 6 to 8 (usually 7), in *diadema* 8 to 10, in *mamillaris* 9 to 10, and in *cærulescens* 13 to 17.

The species is, however, more frequently confused with *spiralis* (Shaw) (vel *brugmansii* (Boie)), than with any other species. The most important points of difference between these two are, that in *spiralis* the scale rows at the greatest girth range from 29 to 36, whereas in *cyanocinctus* they range from 38 to 49. Further the scale rows in *spiralis* are usually only 2 to 6 more numerous at the greatest girth than in the forebody, whereas in *cyanocinctus*, they are usually from 8 to 16 more numerous.

Habits.—Nothing special has been recorded about the habits of this snake in spite of its being such a common species.

Breeding.—A small specimen only 2 feet 11 inches long, in the Indian Museum, I found gravid. The date of its capture is not recorded. It contained 3 fetuses, varying in length from 1 foot 2 inches to 1 foot 3 inches.

Another gravid specimen captured in the Bombay harbour, I found contained 9 young. The parent measured 4 feet 4 inches, and the young of which, 4 were ♂, and 5 ♀, varied from 12 to 13 inches in length. The date of capture is not known.

Fayrer, in his *Thanatophidia*, mentions a gravid specimen from Puri (date not recorded) in which Mr. Stewart found sacs of the size of hen's eggs, containing 16 very young embryos. A gravid female 33 inches long, captured in the Chantabum River, Siam, in

March 1916, contained eight embryos varying in length from 10 to 10½ inches.

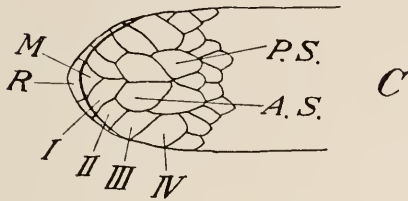
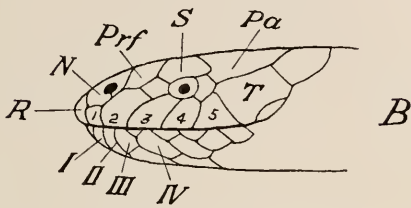
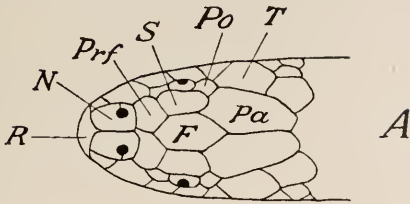
Poison.—Nothing is known. There is no record of a bite in the human subject, but the poison may be judged to be virulent, from the fact that a fowl that Russell caused to be bitten by a five-footer succumbed in 8 minutes.

Lepidosis.—*Rostral.*—Broader than high. *Nasals.*—In contact behind the rostral. When there is a suture from the nostril this passes to the 2nd labial. *Præfrontals.*—Touch the 2nd labial. *Frontal.*—The sutures with the parietals are rather longer than with the supraoculars. *Supraoculars.*—In length and breadth about two-thirds to three-fourths that of the frontal. *Præocular.*—One. *Postoculars.*—Usually two, sometimes one. *Temporals.*—Usually two between the parietal and the 6th labial. *Labials.*—7 to 8. The first 5 usually entire and the 3rd, 4th, and 5th usually touching the eye. *Infralabials.*—5; the 3rd and 4th broadest, the 5th touching 3 or 4 scales behind. *Marginals.*—Usually a complete row after the 2nd infralabial, rarely, a single cuneate, or a complete row after the 3rd infralabial. *Sublinguals.*—Two pairs, the fellows of each in contact or the posterior rarely separated. *Costals.*—Two headlengths behind the head 27 to 36; at the greatest girth 38 to 49. Anteriorly imbricate, posteriorly imbricate, sub-imbricate, or juxtaposed. Each scale has a keel occupying its median three-fifths or so. Almost always this keel is divided by one or two indentations into two or three parts. The very distinctive keels and their serrations are much more conspicuous in males where they are sometimes most pronounced and even spinous on the belly. In females and young though somewhat obscure they are usually discernible if looked for. *Ventrals.*—296 to 398, usually entire, rather less than twice the breadth of the last costal row, keeled on either side like the lowest costals.

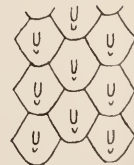
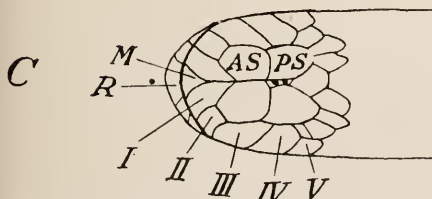
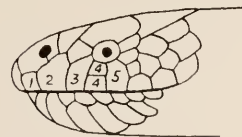
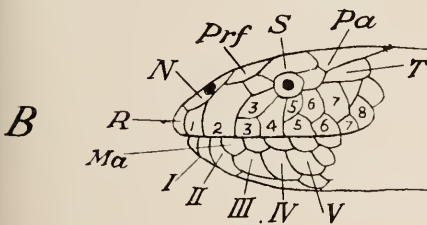
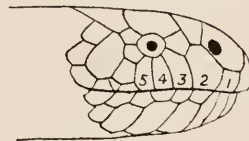
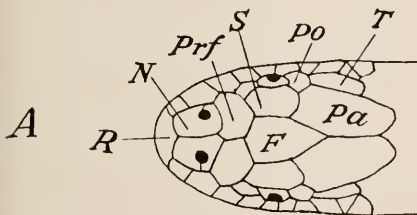
Dentition.—*Maxilla.*—In well over 20 specimens examined I find there are nearly always 7 teeth behind the fangs, but they vary from 6 to 10. The numbers of mandibular, and other teeth given are from the single skull in my collection and are: *Palatine.*—9. *Pterygoid.*—18. *Mandibular.*—14 to 17.

Length.—Adults are usually 4 or 5 feet long, the largest in the British Museum being 4 feet 10 inches. I doubt if I have ever seen one 6 feet, but Murray says it grows to 7 feet. Judging from the length of the young compared with those of *spiralis*, one would expect to hear of as large or even larger specimens than in that species.

Distribution.—In Indian limits it occurs from the Persian Gulf to Tenasserim. It is probably the common set sea-snake on our



Hydrophis spiralis A, B, C. (nat. size) D (x2)



Hydrophis cyanocinctus A to E (nat. size) F (x2)